Attorney's Docket No. 17406.04702 - PATENT

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicants: Tokuji Akutagawa	Examiner: T. Heitbrink
For: MOLDING APPARATUS FOR PRODUCING SOLIDIFIED ARTICLES	Group Art Unit: 1722
Continuation of U.S. Application 09/467,720	
Filed: Herewith	

PRELIMINARY AMENDMENT

Commissioner of Patents and Trademarks
BOX AMENDMENT
Washington D.C. 20231

Sir:

Please amend the specification of the present application as follows:

Please add the following below the title of the application and before "Field of the Invention":

-- The present application is a continuation of U.S. Application Serial No. 09/467,720 filed on December 20, 1999, which is a divisional of U.S. Application Serial No. 08/767,386 filed on December 16, 1996, now U.S. Patent No. 6,039,554. --

In the Claims:

Please cancel claims 1-12.

Please add new claims 13 to 32 as follows:

13. A method for producing solidified articles having a predetermined composite pattern formed of at least two kinds of viscous fluids distinct from each other in color, said method comprising the steps of:

supplying at least two kinds of viscous fluids distinct from each other in color separately at a predetermined ratio;

introducing each of said separately-supplied viscous fluids into a first nozzle having opposing first and second ends and at least one first discrete passage per each of said viscous fluids for separately guiding throughout an entire length of said nozzle each of the viscous fluids, each of said first discrete passages having at least one first discrete passage inlet formed in said first end of said first nozzle, and a portion of said first discrete passages having a plurality of first discrete passage outlets formed in said second end of siad nozzle, while at least one of said first discrete passages having one first discrete passage outlet formed in said second end of said nozzle,

guiding each of said separately-supplied viscous fluids separately through said first discrete passages of the first nozzle to branch a portion of said viscous fluids,

discharging each of said separately-guided viscous fluids through said first discrete passage outlets in said second end of the first nozzle in a larger number of streams than a number of said first discrete passage inlets, and

receiving and solidifying all of said discharged viscous fluids.

14. The method of claim 13, wherein an arrangement of said first discrete passage inlets in said first end of the first nozzle and an arrangement of said first discrete passage outlets in said second end of the first nozzle are relatively different from each other, and wherein said discharging step includes discharging each of said separately-guided viscous fluids through said first discrete passage outlets in said second end of the first nozzle in said arrangement relatively different from the arrangement at said first end of the first nozzle.

15. The method of claim 13, wherein said first discrete passage outlets are arranged in the second end of the first nozzle so that at least one first discrete passage outlet of said at least one first discrete passages having one first discrete passage outlet is surrounded by rest of the first discrete passage outlets, and wherein a timing for discharging said viscous fluids through said first discrete passage outlets is controlled such that discharge of the viscous fluid through said at least one surrounded first discrete passage outlet starts later and ends earlier than discharge of the viscous fluids through said rest of the first discrete passage outlets.

16. The method of claim 13, wherein said first nozzle is rotatably driven around an axis perpendicular to the second end of the first nozzle.

17. The method of claim 13, wherein all of said discharged viscous fluids are received in a unit mold to form a solidified article having a predetermined composite pattern.

18. The method of claim 13, wherein all of said discharged viscous fluids are received on a conveyer, said method further comprising the step of:

cutting said viscous fluids received on said conveyer into pieces to produce solidified articles having a predetermined composite pattern.

19. The method of claim 13, further comprising the steps of, prior to the step of receiving and solidifying all of said discharged viscous fluids:

introducing each of said viscous fluids discharged through said first discrete passage outlets of the first nozzle into a second nozzle having opposing first and second ends and at least one uniting passage communicating with first discrete passage outlets discharging at least two kinds of the viscous fluids among all of said first discrete passage outlets of the first nozzle, said at least one uniting passage each having at least one uniting passage outlet formed in said second end of said second nozzle,

guiding at least two kinds of the viscous fluids through said at least one uniting passage to collect streams of the viscous fluids together, and

discharging said collected streams of said viscous fluids through said at least one uniting passage outlet in said second end of the second nozzle.

20. The method of claim 15, further comprising the steps of, prior to the step of receiving and solidifying all of said discharged viscous fluids,

introducing each of said viscous fluids discharged through said first discrete passage outlets of the first nozzle into a second nozzle having opposing first and second ends and at least one uniting passage communicating with first discrete passage outlets discharging at least two kinds of the viscous fluids among all of said first discrete passage outlets of the first nozzle, said at least one uniting passage each having at least one uniting passage outlet formed in said second end of said second nozzle, said second nozzle further having at least one second discrete passage communicating with said at least one surrounded first discrete passage outlet of said first nozzle, said at least one second discrete passage each having at least one second discrete passage outlet formed in said second end of said second nozzle,

guiding at least two kinds of the viscous fluids through said at elast one uniting passage to collect streams of the viscous fluids together, while guiding at least one kind of the viscous fluids received from said at least one surrounded first discrete passage outlet of the first nozzle separately through said at least one second discrete passage,

discharging all of said viscous fluids from said second nozzle while a timing for discharging said viscous fluids through said at least one uniting passage outlet and said at least one second discrete passage outlet is controlled such that discharge of the viscous fluid through said at least one second discrete passage

outlet starts later and ends earlier than discharge of the viscous fluids through said at least one uniting passage outlet.

21. The method of claim 19, wherein said second nozzle further comprises a plate having at least one orifice therein for passing the viscous fluids, said plate being disposed in the middle of the uniting passage in a plane transverse to a flow direction of the viscous fluids through the uniting passage, and wherein said at least two kinds of the viscous fluids guided through the uniting passage are passed through said at least one orifice in said plate and merged.

22. The method of claim 20, wherein said second nozzle further comprises a plate having at least one orifice therein for passing the viscous fluids, said plate being disposed in the middle of the uniting passage in a plane transverse to a flow direction of the viscous fluids through the uniting passage, and wherein said at least two kinds of the viscous fluids guided through the uniting passage are passed through said at least one orifice in said plate and merged.

23. The method of claim 19, wherein at least one of said first and second nozzles is rotatably driven around an axis perpendicular to the second end of the first nozzle.

24. The method of claim 20, wherein at least one of said first and second nozzles is rotatably driven around an axis perpendicular to the second end of the first nozzle.

25. A method for producing solidified articles having a predetermined composite pattern formed of at least two kinds of viscous fluids distinct from each other in color, said method comprising the steps of:

supplying at least two kinds of viscous fluids distinct from each other in color separately at a predetermined ratio;

introducing each of said separately-supplied viscous fluids into a first nozzle having opposing first and second ends and at least one first discrete passage per each of said viscous fluids for separately guiding throughout an entire length of said nozzle each of the viscous fluids, each of said first discrete passages having at least one first discrete passage inlet formed in said first end of said first nozzle and a plurality of first discrete passage outlets formed in said second end of said nozzle,

guiding each of said separately-supplied viscous fluids separately through said first discrete passages of the first nozzle to branch said viscous fluids,

discharging each of said separately-guided viscous fluids through said first discrete passage outlets in said second end of the first nozzle in a larger number of streams than a number of said first discrete passage inlets, and

receiving and solidifying all of said discharged viscous fluids.

26. The method of claim 25, wherein an arrangement of said first discrete passage inlets in said first end of the first nozzle and an arrangement of said first discrete passage outlets in said second end of the first nozzle are relatively different from each other, and wherein said discharging step includes discharging each of said separately-guided viscous fluids through said first discrete passage outlets in said second end of the first nozzle in said arrangement relatively different from the arrangement at said first end of the first nozzle.

27. The method of claim 25, wherein said first nozzle is rotatably driven around an axis perpendicular to the second end of the first nozzle.

28. The method of claim 25, wherein all of said discharged viscous fluids are received in a unit mold to form a solidified article having a predetermined composite pattern.

29. The method of claim 25, wherein all of said discharged viscous fluids are received on a conveyer, said method further comprising the step of:

cutting said viscous fluids received on said conveyer into pieces to produce solidified articles having a predetermined composite pattern.

30. The method of claim 25, further comprising the steps of, prior to the step of receiving and solidifying all of said discharged viscous fluids:

introducing each of said viscous fluids discharged through said first discrete passage outlets of the first nozzle into a second nozzle having opposing first and second ends and at least one uniting passage communicating with first discrete passage outlets discharging at least two kinds of the viscous fluids among all of said first discrete passage outlets of the first nozzle, said at least one uniting passage each having at least one uniting passage outlet formed in said second end of said second nozzle,

guiding at least two kinds of the viscous fluids through said at least one uniting passage to collect streams of the viscous fluids together, and

discharging said collected streams of said viscous fluids through said at least one uniting passage outlet in said second end of the second nozzle.

31. The method of claim 30, wherein said second nozzle further comprises a plate having at least one orifice therein for passing the viscous fluids, said plate being disposed in the middle of the uniting passage in a plane transverse to a flow direction of the viscous fluids through the uniting passage, and wherein said at least two kinds of the viscous fluids guided through the uniting passage are passed through said at least one orifice in said plate and merged.

32. The method of claim 30, wherein at least one fo said first and second nozzles is rotatably driven around an axis perpendicular to the second end of the first nozzle.

With the above-noted amendments, it is respectfully asserted that all of the claims now submitted are in condition for allowance and such disposition is earnestly solicited.

Respectfully submitted,

Dated: 8/16/01

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